University of Zurich[UZH]

**Zurich Open Repository and Archive**
University of Zurich
University Library
Strickhofstrasse 39
CH-8057 Zurich
www.zora.uzh.ch

Year: 2015

# Optical coherence tomography follow-up after bioresorbable in metallic and metallic in bioresorbable stenting: tackling in-stent restenosis in the era of bioresorbable vascular scaffolds

Frangieh, Antonio H ; Templin, Christian ; Binder, Ronald K

DOI: https://doi.org/10.1093/eurheartj/ehv240

Posted at the Zurich Open Repository and Archive, University of Zurich
ZORA URL: https://doi.org/10.5167/uzh-155548
Journal Article
Published Version

Originally published at:
Frangieh, Antonio H; Templin, Christian; Binder, Ronald K (2015). Optical coherence tomography follow-up after bioresorbable in metallic and metallic in bioresorbable stenting: tackling in-stent restenosis in the era of bioresorbable vascular scaffolds. European Heart Journal, 36(32):2183.
DOI: https://doi.org/10.1093/eurheartj/ehv240

inflammation by positron emission tomography in patients with aortic stenosis. *Circulation* 2012;**125**:76–86.
25. Angel K, Provan SA, Fagerhol MK, Mowinckel P, Kvien TK, Atar D. Effect of 1-year anti-TNF-alpha therapy on aortic stiffness, carotid atherosclerosis, and calprotectin in inflammatory arthropathies: a controlled study. *Am J Hypertens* 2012;**25**:644–650.
26. Brezinski EA, Follansbee MR, Armstrong EJ, Armstrong AW. Endothelial dysfunction and the effects of TNF inhibitors on the endothelium in psoriasis and psoriatic arthritis: a systematic review. *Curr Pharm Des* 2014;**20**:513–528.
27. Gisondi P, Fantin F, Del GM, Valbusa F, Marino F, Zamboni M, Girolomoni G. Chronic plaque psoriasis is associated with increased arterial stiffness. *Dermatology* 2009;**218**:110–113.
28. Biyik I, Narin A, Bozok MA, Ergene O. Echocardiographic and clinical abnormalities in patients with psoriasis. *J Int Med Res* 2006;**34**:632–639.
29. Shang Q, Tam LS, Yip GW, Sanderson JE, Zhang Q, Li EK, Yu CM. High prevalence of subclinical left ventricular dysfunction in patients with psoriatic arthritis. *J Rheumatol* 2011;**38**:1363–1370.
30. Saleh HM, Attia EA, Onsy AM, Saad AA, Abd Ellah MM. Platelet activation: a link between psoriasis per se and subclinical atherosclerosis – a case-control study. *Br J Dermatol* 2013;**169**:68–75.
31. Khalid U, Ahlehoff O, Gislason GH, Kristensen SL, Skov L, Torp-Pedersen C, Hansen PR. Psoriasis and risk of heart failure: a nationwide cohort study. *Eur J Heart Fail* 2014;**16**:743–748.
32. Kimball AB, Robinson D Jr, Wu Y, Guzzo C, Yeilding N, Paramore C, Fraeman K, Bala M. Cardiovascular disease and risk factors among psoriasis patients in two US healthcare databases, 2001–2002. *Dermatology* 2008;**217**:27–37.
33. Yang YW, Keller JJ, Lin HC. Medical comorbidity associated with psoriasis in adults: a population-based study. *Br J Dermatol* 2011;**165**:1037–1043.

## CARDIOVASCULAR FLASHLIGHT

doi:10.1093/eurheartj/ehv240
Online publish-ahead-of-print 3 June 2015

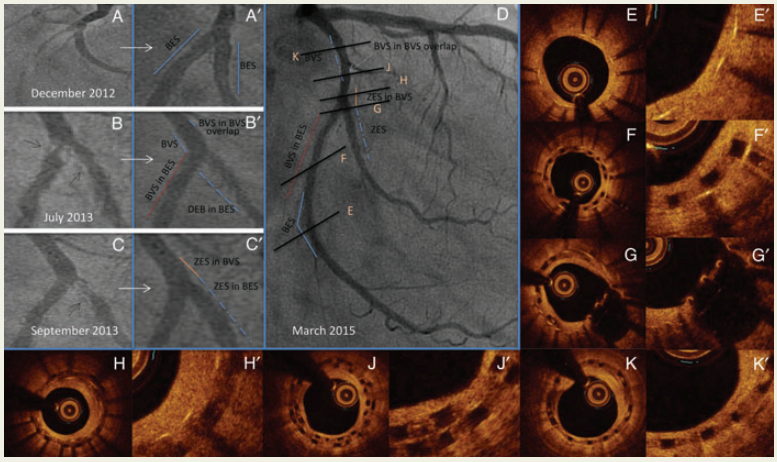
# Optical coherence tomography follow-up after bioresorbable in metallic and metallic in bioresorbable stenting: tackling in-stent restenosis in the era of bioresorbable vascular scaffolds

**Antonio H. Frangieh, Christian Templin, and Ronald K. Binder***

Department of Cardiology, University Heart Center, University Hospital Zürich, Rämistrasse 100, Zürich CH 8091, Switzerland

* Corresponding author. Tel: +41 44 255 17 64, Fax: +41 44 255 44 01, Email: ronald.binder@usz.ch

**This paper was guest edited by Brahmajee Nallamothu (University of Michigan; bnallamo@umich.edu).**




A 63-year-old woman with stable angina underwent percutaneous coronary intervention of the left circumflex coronary artery (LCX) and the first obtuse marginal branch (OM1) with biolimus-eluting stents (BES) with the V-stenting technique (*Panels A* and *A′*). Seven months later due to recurrent angina repeat coronary angiography was performed and revealed in-stent restenosis in the proximal segments of both BES. Subsequently, the OM1 lesion was dilated with a paclitaxel drug-coated balloon. The LCX stenosis was treated with an everolimus eluting bioresorbable vascular scaffold (BVS) extending into the proximal LCX segment (bioresorbable in metallic stenting) (*Panels B* and *B′*). A proximal edge dissection (Supplementary material online, *Videos—OCT*) was managed by implantation of another overlapping BVS in the proximal LCX (*Panels J*, *J′*, *K, and K′*). Three months later the patient presented with recurrent chest pain. Coronary angiography documented in-stent restenosis in the proximal OM1 (*Panel C*) that was treated by implantation of a zotarolimus-eluting stent (ZES) extending from OM1 to the proximal LCX (*Panel C′*) covering the BVS (metallic in bioresorbable stenting).

Twenty-seven months after the first intervention the patient reported atypical angina. Because of her extensive history, she was directly referred for coronary angiography, which showed all stents patent with excellent flow (*Panel D*). An optical coherence tomography was performed (Supplementary material online, *Videos*), which confirmed complete endothelialization, no restenosis, and well-expanded BVS in BES (*Panels F* and *F′*) as well as ZES in BVS (*Panels H* and *H′*).

Although these approaches need further evaluation through clinical trials, this case confirms the feasibility and efficacy of using metallic in bioresorbable and bioresorbable in metallic stenting for the treatment of in-stent restenosis with excellent endothelialization as documented by optical coherence tomography.

Supplementary material is available at *European Heart Journal* online.

Published on behalf of the European Society of Cardiology. All rights reserved. © The Author 2015. For permissions please email: journals.permissions@oup.com.